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PRELIMINARY NOTICE

A further study of 125 cross sections of the femora of as many lower animals has been continued in the American Museum of Natural History, New York, during the present summer. The list includes amphibians, reptiles, birds and mammals. This makes over 300 femora so far examined, one hundred of which are human.

Important variations occur. The lower animals furnish the key to the surprising variations which are found in man. The amphibians are pretty true to their lamellar type. The reptiles seem to show divergence. The lizard group retains the amphibian lamellae, the alligator and some turtles have departed from it and show a crude system formation. Some birds conform to the lamellar, some to the laminar and some to the Haversian system type. A much larger number of mammals belong to the laminar type than was expected. Mammalian species often show a high and low type. For example, the African Elephant is composed entirely of Haversian system, high; the Asiatic, of Haversian systems, laminae, and lamellae in about equal parts, low. The hippopotamus, rhinoceros, giraffe, wart hog, water buffalo, camel, armadillo are low.

It is the intention of the writer to publish articles on the subject as soon as the sections can be drawn and described.

Creighton Med. College.

J. S. FOOTE.

MICROBIOLOGY

This compact manual, which is now in its second edition, is an exceedingly timely resumé of a field which is of prime interest to members of this Society. The book is the product of a large number of collaborators, whose work has been brought together under the editorship of Professor Charles E. Marshall. While such books are always subject to some unevenness and repetition and lack of unity as compared with the work of a single author, there is here at least a compensating gain in authoritativeness in a wide range of material.

The book is divided into three general parts: Morphology and Culture of Microorganisms; Physiology of Microorganisms; and Applied Microbiology.

The editor has made an effort to present the fundamental facts

and principles of the subject in such a way as to "show how these principles fit into subjects of a more or less strictly professional or practical nature." The relation of these microorganisms to Agriculture and to Domestic Science is treated at length and well.

In the morphological part we naturally have chapters on Molds, Yeasts, Bacteria, Protozoa, and the so-called invisible microorganisms. The physiological section includes Metabolism, Effects of Physical and Chemical Conditions on the Microorganisms, and their mutual influences. Under applied microbiology are such divisions as microbiology of the air, of water and sewage, of the soil, of milk and milk products, of various special industries, and of the diseases of plants, of animals and of man.

A brief history of the advance of microbiology opens the volume.

FEEDING HABITS OF MACKEREL

Bullen (Jour. Mar. Biol. Assn., June 1912) gives some conclusions on the feeding of mackerel in the English Channel. It is claimed that the mackerel feeds in two ways: "First, by a system of filtration upon plankton organisms, and secondly upon prey of a large character which is hunted by sight." From March to June the mackerel were feeding exclusively on plankton,—first vegetable, and later the general zoöplankton. The author, by examination of stomachs of the fish, finds that there is considerable evidence for believing that they are incapable of assimilating the larger prey when feeding largely on the minor forms of plankton. Later still they passed to larger zoöplankton and to such larger animals as were presented. It is concluded that there are two main types of the active "selective" feeding, and that the mackerel can subsist on these for reasonable periods of time, irrespective of the season. One of these is the selection of individual prey; the other is the selection of plankton organisms where they occur in great numbers, even tho the individual organism is too small for the mackerel to distinguish. These conditions apparently determine the movements of the mackerel and the method of catching them, and a knowledge of the facts may well assist in an understanding of the problems of the fisheries.

Microbiology for Agriculture and Domestic Science Students. Edited by Charles E. Marshall. Illustrated; 724 pages. P. Blakiston & Co., Phila. Price \$2.50.